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UTILITY PATENT APPLICATION TRANSMITTAL
(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	004860.P2292
First Inventor or Application Identifier	Randy Ubillos
Title	EDIT TO TAPE
Express Mail Label No.	EM560884537US

APPLICATION ELEMENTS
See MPEP chapter 600 concerning utility patent application contents

ADDRESS TO:
Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. [X] Fee Transmittal Form
(Submit an original, and a duplicate for fee processing)

2. [X] Specification   Total Pages [27]
(preferred arrangement set forth below)
- Descriptive title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to Microfiche Appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings (if filed)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

3. [X] Drawing(s) (35 CFR 113)   Total Sheets [4]

4. Oath or Declaration   Total Pages [ ]
a. [ ] Newly executed (original copy)
b. [ ] Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 16 completed)
[Note Box 5 below]
i. [ ] DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).

*NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

5. [ ] Microfiche Computer Program (Appendix)

6. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
a. [ ] Computer Readable Copy
b. [ ] Paper Copy (identical to computer copy)
c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. [ ] Assignment Papers (cover sheet & document(s))
8. [ ] 37 CFR 3.73(b) Statement (when there is an assignee)   [ ] Power of Attorney
9. [ ] English Translation Document (if applicable)
10. [ ] Information Disclosure Statement (IDS)/PTO - 1449   [ ] Copies of IDS Citations
11. [ ] Preliminary Amendment
12. [X] Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
13. [ ] *Small Entity Statement(s)   [ ] Statement filed in prior application, Status still proper and desired
14. [ ] Certified Copy of Priority Document(s) (if foreign priority is claimed)
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[ ] Continuation [ ] Divisional [ ] Continuation-in-part (CIP)   of prior application No:_____/_____
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UNITED STATES PATENT APPLICATION

FOR

EDIT TO TAPE

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BACKGROUND

I.   Field of the Invention

The present invention relates to media editing. In particular, the present invention relates to transferring edited media to a sequential storage device.

II. Background

Editing is generally the art of making subtle adjustments to a material or materials in a form that communicates a message with maximum impact. In the area of video editing, the editor defines and shapes the video and/or audio until the message to be delivered is accomplished. Generally, video editing may be divided into two categories: linear video editing and non-linear video editing. In linear video editing, the images are taken in a sequential order. Stated differently, one idea after another must be previously conceived and then, the video is taken in the conceived chronological sequence. For example, suppose a video is to be taken of an office, the editor must first conceptualize as to what the scenes would be and in which sequence. The editor may want to take a video of an entry into the Office. This scene perhaps followed by a focus on a pot plant in a corner. The scene may then move to the various articles on a desk and then, the scene shifting its focus to a window. In

linear video editing, this is the precise sequence the video must be taken.

By contrast, in non-linear video editing, scenes may be taken in any order and later edited according to a desired sequence. Whether linear video editing or non-linear video editing approach is to be taken generally depends on the video system that is to be used. While non-linear video editing system may be more complicated, the advantage is that the video may be taken in any sequence and later, through careful observation of the video and a thoughtful process, the video may be manipulated to communicate the message in the manner the editor wishes to convey with maximum impact. Due to its free format, the editor can readily impute creativity without being constrained physically.

With the advancement of computer technology, further improvements have been made to the video editing system through a process called digitization. In particular, the digitization of video has had a profound impact on non-linear video editing system. Previously, copies of a film containing the video would be made. By cutting and splicing the copies, an edited version of the original film was made. If the editor was not satisfied, further copies of the original film were made and the cutting and splicing would resume until a desired product was obtained. In a digital video editing system, video is stored in a storage

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medium such as magnetic discs or laser discs thereby allowing the video to be retrieved randomly and displayed on a display device such as a monitor. This alleviates the burdensome technique of cutting and splicing. Further, in random access,

5 each image of the video operates independently, thus, it is possible to retrieve a particular image without sequentially going through other materials to reach the image. Examples of sequential access would be films or magnetic tapes. By allowing images to be accessed randomly, video can be easily manipulated

10 into any desired sequence which is the heart of a non-linear video editing system.

In certain instances, it is desirable to record the edited video and/or audio clips onto a tape. A clip generally defines movies, still images, nested sequences, video files and audio

15 files. The recorded tape could be mass duplicated for distribution using conventional tape duplicating machines or the tape could serve as a permanent record for the edited clips. With the advent of powerful processors such as those to be described later, it is now possible to perform edit to tape

20 process within the video editing system itself. However, if the edit to tape process requires too much effort on the part of the editor, the feature distracts the editor during editing. In a known method, the editor manually calculates each and every start and end points of the video and/or audio clips at a source

and also manually calculates every corresponding start and end

points at a tape destination. It is desirable to provide a

video editing system that is easy to use and does not burden the

editor.

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SUMMARY

A method and apparatus is described that allows edited media to be recorded to a sequential storage device. An edited time based stream of information of a source media is displayed. The edited time based stream is transferred to a sequential storage device to be recorded using an icon where the icon represents a function to be performed on the storage device.

Other features and advantages of the present invention will be apparent from the accompanying drawings and detailed description to be followed.

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BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of examples and not as limitations in the figures of the accompanying drawings in which:

5   **Figure 1a** is a diagram of a computer system that may contain an embodiment of the invention;

Figure 1b is a diagram of a storage medium that may contain an embodiment of the invention;

Figure 1c illustrates an example of a three point editing;

10   **Figure 2** is a diagram of a Graphics User Interface (GUI) that may be used with an embodiment of the invention; and

Figure 3 is a flowchart of an embodiment of the invention.

DETAILED DESCRIPTION

Figure 1a is an example of a computer system 100 in which

an embodiment of the invention may be incorporated. The

computer system 100 comprises a processor 101 coupled to a main

5   memory 105 via a bus 103. The main memory 105 may be dynamic

random access memories (DRAMs) or other suitable memories. Data

and instructions are stored in the main memory 105 which are

processed by the processor 101. Generally, coupled to the bus

103 is a read only memory (ROM) in which the basic input/output

10   instructions (BIOS) are stored. Further coupled to the bus 103

are various controllers such as memory management unit (MMU),

interrupt controller, video controller, direct memory access

controller (DMA) and input/output(I/O) controller, among others,

all which are not shown in the figure. Further coupled to the

15   bus 103 is an I/O interface 107 to which the various I/O devices

are coupled to. Examples of the I/O devices are mass storage

devices 111 such as magnetic disc drives and/or optical disc

drives, an alphanumeric input device 113 such as a keyboard, a

cursor control device 117 such as a mouse or a trackball, a

20   display device 119 such as a monitor or a liquid crystal display

(LCD), a printer device 121 such as a printer, a communication

device 123 such as a modem and a network interface device 125

such as ethernet.

Additionally, a sequential storage device 127 such as a video tape deck or a video camcorder is coupled to the computer through the I/O controller 107. For example, the sequential storage device 127 can be connected through the printer port,

5   modem port, or Apple FireWire port. Below is a list of deck protocols that may be used:

Apple® FireWire

Apple® FireWire Basic

JVC® RS-232

10   Panasonic® RS-232

Sony® RS-422

Sony® RS-232

Sony® VISCA

Sony® LANC

15   Using the video tape deck as an example, the video tape deck 127 stores edited video clips and/or accompanying audio clips in a video tape 129 formatted in accordance with an embodiment of the invention. In its one format, the video tape

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129 may be in "Black and Code". Black and Code defines a format in which the video tape is written with black pictures with no sound and throughout the tape, timecodes are inserted. Timecodes allow the video tape deck 127 to keep track of the

5   various positions within a tape thereby allowing quick and fast navigation through the tape. Generally, the video tape deck 127 is controlled in a manner such that when a clip is being recorded, the tape head backs up to a certain distance and rolls forward to synchronize with the last frame using the timecode

10   and starts recording. In this manner, an unsightly gap between the clip and the last frame recorded is not formed. Thus, between the two recorded clips, it is perceived as being one continuous clip.

The computer system 100 described above is readily

15   available commercially. Preferably, The computer system 100 be one of the Macintosh® family of personal computers such as the Macintosh® Quadra™, Macintosh® Performa™, PowerMac® brand personal computers manufactured by Apple Computer®, Inc. of Cupertino, California. The processor can be one of the Power PC

20   family of microprocessors such as the 604 or G3 PowerPC® such as those manufactured by Motorola®, Inc. of Schaumburg, Illinois. However, other systems and processors may be used. Generally, the present invention may be stored in a mass storage device 111 or a storage disc 112, which may be magnetic or optical, until

such time the processor 101 retrieves from storage and down loads into the main memory 105 for processing. **Figure 1b** is an example of a storage medium 150 which may be random access memory (RAM), hard disk, compact disc and/or magnetic disc,

5   among others. The storage medium 150 comprises edit to tape icon identifiers 151, instruction and data codes 153 for edit to tape icons to control the sequential storage device connected to the computer system and software 155 that manipulates the storage device under control of the edit to tape icons.

10   Processor 101 processes the data and instructions from the main memory 105. Command selections and information to direct the flow of data and instructions to the processor 101 may be performed by a user via the alphanumeric device 113 and/or cursor control device 117 or voice recognition. The processor

15   101 processes the data and instructions and the results may be displayed on a display device 119.

Figure 1c illustrates an example of a three point editing to aid in the understanding of the invention. Three point editing is a method in which three editing points are selected

20   between a source and a destination. At the source, a start point 161 (also referred to as in point) and an end point 162 (also referred to out point) are selected on a source media 160 constituting the edited source media. At the destination media, an in point 166 is selected which is used to define the start

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point of the transferred edited source media to be inserted at the destination media. Because the time duration t between the source in point 161 and the source out point 162 does not change during the transfer, the destination out point position 168 can

5   be calculated from the selected destination in point 166 and the time duration t of the source in and out point. At the destination media 170, the edited source media 171 has been inserted. Of course, this is but one form of three point editing and other forms of three point editing can be derived

10 from the example above.

Figure 2 is an example of a graphics user interface (GUI) 200 that may be used with an embodiment of the invention. However, other user interfaces may be used according to a desired result by the designer. The GUI 200 is displayed on a

15 display device 119 (See **Figure 1a**) and aids the user in controlling the flow of data and instructions to the processor 101. Typically, the GUI 200 comprises one or more windows, some which may be opened by the processor 101 in accordance with data and instructions and some which may be opened by the user. The

20 figure illustrates two windows 210, 230. Window 210 is a viewer that performs as a source monitor in which various clips containing time based stream of information can be loaded. The loaded time based stream of information can be, but not limited to, a plurality of video clips, a plurality of video and audio

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clips, or a plurality of audio clips. Once loaded in the window

210, editing can be performed on the time based stream of

information using a control panel 220 located at the bottom of

the window 210. The control panel 220 comprises a timeline 211

5 wherein the timeline keeps track of the chronological sequence

of loaded time based stream of information. The timeline 211

includes two edit pointers 212, 213 that are used to select the

in point and the out point of the time based stream of

information which constitutes an edited time based stream of

10 information to be transferred to a destination.

The manipulation of the edit pointers 212, 213 can be

performed by the pointing arrow 250. The pointing arrow 250 is

operated by the user through the I/O device such as the cursor

control device 117 (e.g., a mouse or a trackball) or the

15 alphanumeric device 113 or by speech recognition. For example,

the user can manipulate individually the position of the edit

pointers 212, 213 by placing the pointing arrow 250 on the edit

pointer desired to be moved; holding down a button located on

the mouse, dragging the pointer to the desired position; and

20 releasing the button.

The control panel 220 of the above example further

comprises a play icon 215, a reverse icon 214, and a forward

icon 216. These icons are used to play the time based stream of

information or move the position of the playhead backward or

forward within the timeline 211. The control panel 220 also

comprises a jog control icon 218 to jog one frame at a time and

a shuttle control 217 that adjusts the frame speed of the video.

The second window 230 is an edit to tape window which

5   allows the edited time based stream of information to be

transferred to a tape. At the bottom of the second window 230

is a second control panel 240 that interfaces with the video

tape deck 127 connected to the computer. The control panel 240

comprises a play icon 242, a reverse icon 241, and a forward

10 icon 243 used to play a time based stream of information of the

video tape deck 127 or move the position of the playhead

backward or forward. By manipulating the icons 241, 242 and

243, the video contained in the video tape deck 127 can be

viewed at the window 220 and/or its audio can be heard in a

15 speaker coupled to the computer. In one embodiment, the icons

241, 242, 243 manipulate a copy of the video and/or audio

recorded in the video tape deck 127 that was previously stored

in the main memory 105. In this manner, the video tape deck 127

need not actually come into operation until a video clip and/or

20 an audio clip is to be recorded.

On the upper left and right corners of the window 230 are a

plurality of timecode indicators 244, 245 which in one

embodiment can be used to position the playhead of the video

tape deck 127 on the video tape 129. Timecode allows for fast

and accurate navigation through the tape deck 127. The timecode

indicators 244, 245 can be used to indicate in and out points

for retrieval of a recorded clip in the tape deck 127 onto the

main memory 105. In one embodiment, the upper left timecode

5   indicator 244 displays a duration of clip to be displayed and/or

heard. The upper right timecode indicator 245 displays the

current playhead position. The timecode contained in the upper

right timecode indicator 245 can be changed by entering a new

timecode in the indicator 245. In one embodiment, the timecode

10   has the following format:

Hours: Minutes: Seconds: Frames

Thus, entering 01451609 sets the time code to 01: 45: 16: 09.

Note that the format is accurate to a frame and thus, the

playhead is able to navigate and be positioned at a particular

15   frame. In one embodiment, one second is made equivalent to

thirty frames. In this instance, entering fifty-five in the

frame column causes the timecode indicator 245 to automatically

adjust the format to one second and fifteen frames.

The control panel 240 also comprises a mark in icon 233 and

20   a mark out icon 234 which can be used to select an in point and

an out point on a clip that is displayed on the second window

230. The selected in point or the out point can be used as one

of the three edit points in the three point editing described

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above.   Selecting the in point or the out point causes the playhead to be positioned to the selected in point or a calculated in point if the out point was selected.   The control panel 240 further comprises video icon 231 and audio icon 232 to

5   select which media is to be recorded by the video tape deck 127. For example, selecting the video icon 231 causes only the edited video clip to be recorded on the tape deck.   Likewise, selecting the audio icon 232 causes only the edited audio clip to be recorded on the tape deck.   If both icon 231, 232 are selected,

10   both the video and audio sequence are recorded in the tape deck. Similar to the control panel 220, the control panel 240 also comprises a jog control icon 239 to jog one frame at a time and a shuttle control icon 238 that adjusts the frame speed of the video.

15   The control panel 240 further comprises a plurality of icons 235, 236, 237 in accordance with an embodiment of the present invention.   Each icon represents an interaction with the video tape deck in a manner defined by the function of the icon. According to the embodiment three icons are displayed.   The icon

20   235 represents an insert edit; the icon 236 represents an assembly edit; and the icon 237 represents a preview edit.   The functions represented by the icons are described below:

Insert editing: Insert editing is a form of an overwrite editing in which the edited source media is inserted

at an in point of a destination media which is the position of
the playhead. Overwrite editing is an editing where the edited
source media replaces the current destination media by an equal
length of the edited source media. One feature of the insert
5   editing is that the original timecode encoded on the tape
remains preserved.

Assembly editing: Assembly editing is a form of an
overwrite editing in which the edited source media is inserted
at an in point which is the position of the playhead. The
10   difference between the insert editing and the assembly editing
is that the assembly editing overwrites the existing timecode on
the tape.

Preview: Preview simulates the insert to tape
operation but nothing is actually recorded on the tape. The
15   feature gives the editor a preview of the edit to tape operation
before the actual recording takes place.

The edit to tape operations can be performed using various
methods. In one method, the steps comprise selecting three
points using three point editing, dragging the edited source
20   media to the edit to tape window using the pointing arrow 250
and placing it there which activates a default icon. The
default icon can be one of the inserting editing icon 235,
assembly overwrite editing icon 236 or preview editing icon 237.

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In another method, once the three points in the three point editing have been selected, dragging the edited source media using the pointing arrow 250 to one of icons 235, 236, 237 which activates that icon. In yet another method, once the three

5 points in the three point editing have been selected, clicking one of the icons 235, 236, 237 using the pointing arrow 250 which activates that icon. the list of methods that may be used to activate the edit to tape icons 235, 236, 237 described above should not be construed as limitations but as examples.

10 Note that the two window systems described above, is but one embodiment. In another embodiment, the source media has been already edited and stored in a file, for example, which is represented as a file icon. By dragging the file icon to the edit to tape window or using the various methods described

15 immediately above, the edited source media is recorded onto the tape.

Figure 3 is a flowchart in accordance with an embodiment of the invention. In block 301, three point editing is performed between the source media and the tape media. In block 302,

20 insert edit to tape is performed using an edit to tape icon that represents a function to be performed on the tape.

In the foregoing specification, the invention has been described with reference to specific embodiments thereof. It

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will, however, be evident that various modifications and changes

can be made thereto without departing from the broader spirit

and scope of the invention as set forth in the appended claims.

The specification and drawings are accordingly, to be regarded

5   in an illustrative rather than a restrictive sense.

CLAIMS

What is claimed is:

1   1.   A method comprising:

2   displaying an edited time based stream of information

3   of a source media; and

4   transferring said edited time based stream to a sequential

5   storage device using an icon, wherein said icon represents a

6   function to be performed on said sequential storage device.

1   2.   A method as in claim 1, further comprising:

2   editing between said source media and a destination media

3   using a three point edit.

1   3.   A method as in claim 1, wherein transferring said

2   edited time based stream comprises:

3   transferring said edited time based stream to a

4   portion of a window, said window having at least one icon;

5   said icon performing a function on said sequential device

6   by default.

1   4.   A method as in claim 1, wherein transferring said

2   edited time based stream comprises:

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3   transferring said edited time based stream to said icon,

4   said icon performing said function on said sequential device.

1   5.   A method as in claim 1, wherein transferring said

2   edited time based stream comprises:

3   clicking said icon with a cursor control device, said icon

4   performing said function on said sequential device.

1   6.   A method as in claim 1, wherein said function is one of an

2   insert edit, an assembly edit and a preview edit.

1   7.   A method as in claim 1, further comprising:

2   black and coding a tape contained in said sequential

3   device.

1   8.   A method as in claim 1, further comprising:

2   using a timecode indicator to position a playhead of said

3   sequential storage device.

1   9.   A method as in claim 1, further comprising:

2   using one of a mark in icon and a mark out icon to position

3   a playhead of said sequential storage device.

1   10.   An apparatus comprising:

2   a display device to display an edited time based

3 stream of information of a source media;

4   at least one icon displayed on said display device,

5 wherein said icon represents a function to be performed on

6 a sequential storage device; and

7   means for transferring said edited time based stream to

8 said sequential storage device using said icon.

1 11. An apparatus as in claim 10, further comprising:

2   means for performing a three point editing between said

3 source media and a destination media.

1 12. An apparatus as in claim 10, further comprising:

2   means for insert editing said edited time based stream to

3 said sequential storage device using said icon.

1 13. An apparatus as in claim 10, further comprising:

2   means for assembly editing said edited time based stream to

3 said sequential storage device using said icon.

1 14. An apparatus as in claim 10, further comprising:

2   means for preview editing said edited time based stream

3 using said icon.

1   15. An apparatus as in claim 10, wherein said sequential

2   device further comprising:

3   a tape having a black and code format.

1   16. An apparatus as in claim 10, further comprising:

2   means for positioning a playhead of said sequential storage

3   device.

1   17. An apparatus as in claim 11, wherein said three point

2   editing means is a cursor control device.

1   18. An apparatus as in claim 10, wherein said transferring

2   means is a cursor control device.

1   19. An apparatus as in claim 12, wherein said insert editing

2   means is a processor executing a sequence of instructions.

1   20. An apparatus as in claim 13, wherein said assembly editing

2   means is a processor executing a sequence of instructions.

1   21. An apparatus as in claim 14, wherein said preview

2   editing means is a processor executing a sequence of

3   instructions.

1   22. An apparatus as in claim 16, wherein said positioning

2   means is a timecode indicator.

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1   23. An apparatus as in claim 16, wherein said positioning

2   means is one of a mark in icon and a mark out icon.

1   24. A system comprising:

2   a computing device;

3   a display device to display an edited time based

4   stream of information of a source media;

5   at least one icon displayed on said display device,

6   wherein said icon represents a function to be performed on

7   a sequential storage device; and

8   said computing device including a first circuitry

9   configured to transfer said edited time based stream to

10 said sequential storage device using said icon.

1   25. A system as in claim 24, further comprising:

2   a second circuitry configured to perform a three point

3   editing between said source media and a destination media.

1   26. A system as in claim 24, further comprising:

2   a third circuitry configured to insert edit said

3   edited time based stream to said sequential storage device

4   using said icon.

1   27. A system as in claim 24, further comprising:

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2   a fourth circuitry configured to assembly edit said

3 edited time based stream to said sequential storage device

4 using said icon.

1 28. A system as in claim 24, further comprising:

2   a fifth circuitry configured to preview edit said

3 edited time based stream using said icon.

1 29. A system as in claim 24, wherein said sequential

2 device further comprising:

3   a tape having a black and code format.

1 30. A system as in claim 24, further comprising:

2   a sixth circuitry configured to position a playhead of

3 said sequential storage device.

1 31. A machine readable medium having stored thereon data

2 representing sequences of instructions, which when executed

3 by a computer system, cause said computer system to perform

4 a method comprising:

5   displaying an edited time based stream of information

6 of a source media; and

7   transferring said edited time based stream to a

8 sequential storage device using an icon, wherein said icon

9 represents a function to be performed on said sequential

10 storage device.

1   32. A machine readable medium as in claim 31, further

2 comprising:

3   editing between said source media and a destination

4 media using a three point edit.

1   33. A machine readable medium as in claim 31, wherein

2 transferring said edited time based stream comprises:

3   transferring said edited time based stream to a

4 portion of a window, said window having at least one icon;

5   said icon performing a function on said sequential

6 device by default.

1   34. A machine readable medium as in claim 31, wherein

2 transferring said edited time based stream comprises:

3   transferring said edited time based stream to said

4 icon, said icon performing said function on said sequential

5 device.

1   35. A machine readable medium as in claim 31, wherein

2 transferring said edited time based stream comprises:

3   clicking said icon with a cursor control device, said

4 icon performing said function on said sequential device.

1   36.   A machine readable medium as in claim 31, wherein said

2   function is one of an insert edit, an assembly edit and a

3   preview edit.

1   37.   A machine readable medium as in claim 31, further

2   comprising:

3   black and coding a tape contained in said sequential

4   device.

1   38.   A machine readable medium as in claim 31, further

2   comprising:

3   using a timecode indicator to position a playhead of

4   said sequential storage device.

1   39.   A machine readable medium as in claim 31, further

2   comprising:

3   using one of a mark in icon and a mark out icon to

4   position a playhead of said sequential storage device.

ABSTRACT

A method and apparatus is described that allows edited
media to be recorded to a sequential storage device. An edited
time based stream of information of a source media is displayed.
The edited time based stream is transferred to a sequential
storage device to be recorded using an icon where the icon
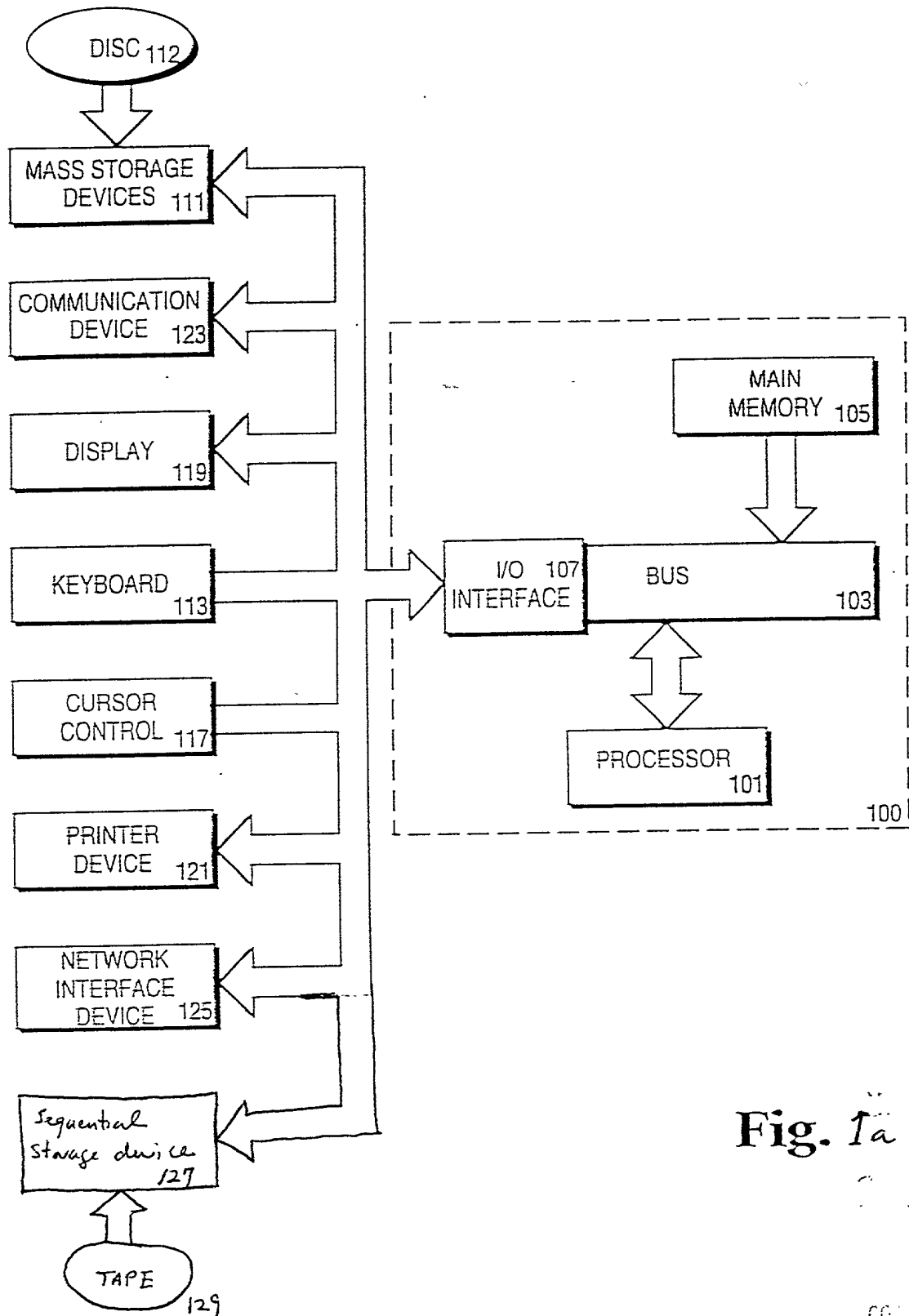represents a function to be performed on the storage device.

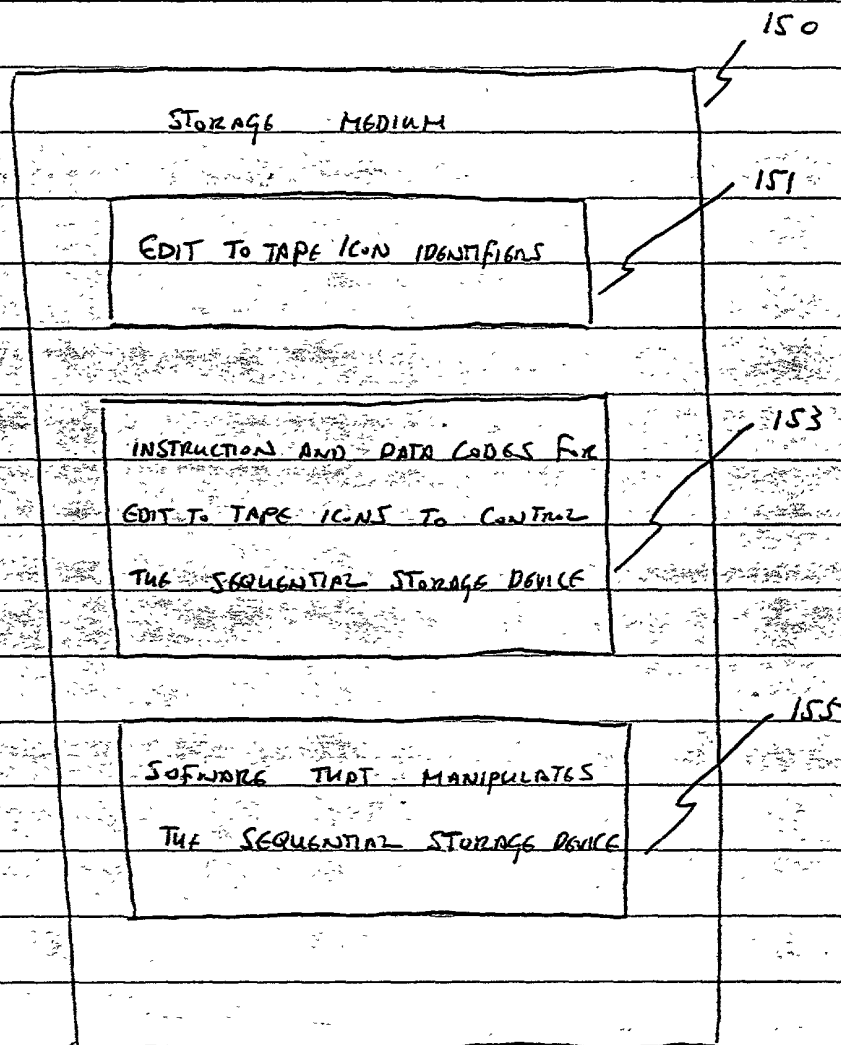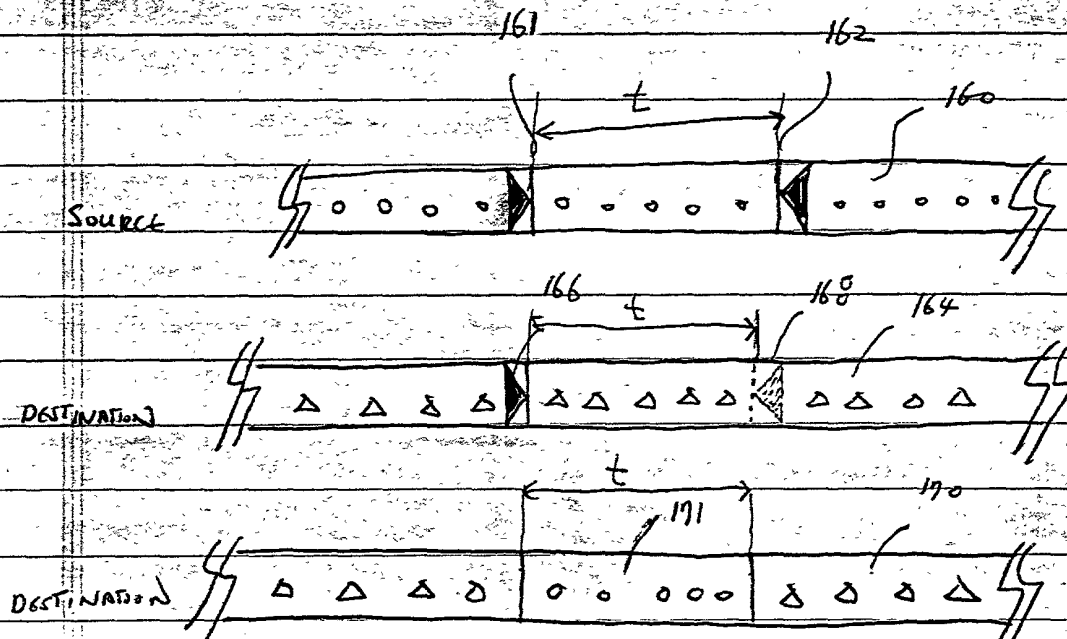EM#560884537US

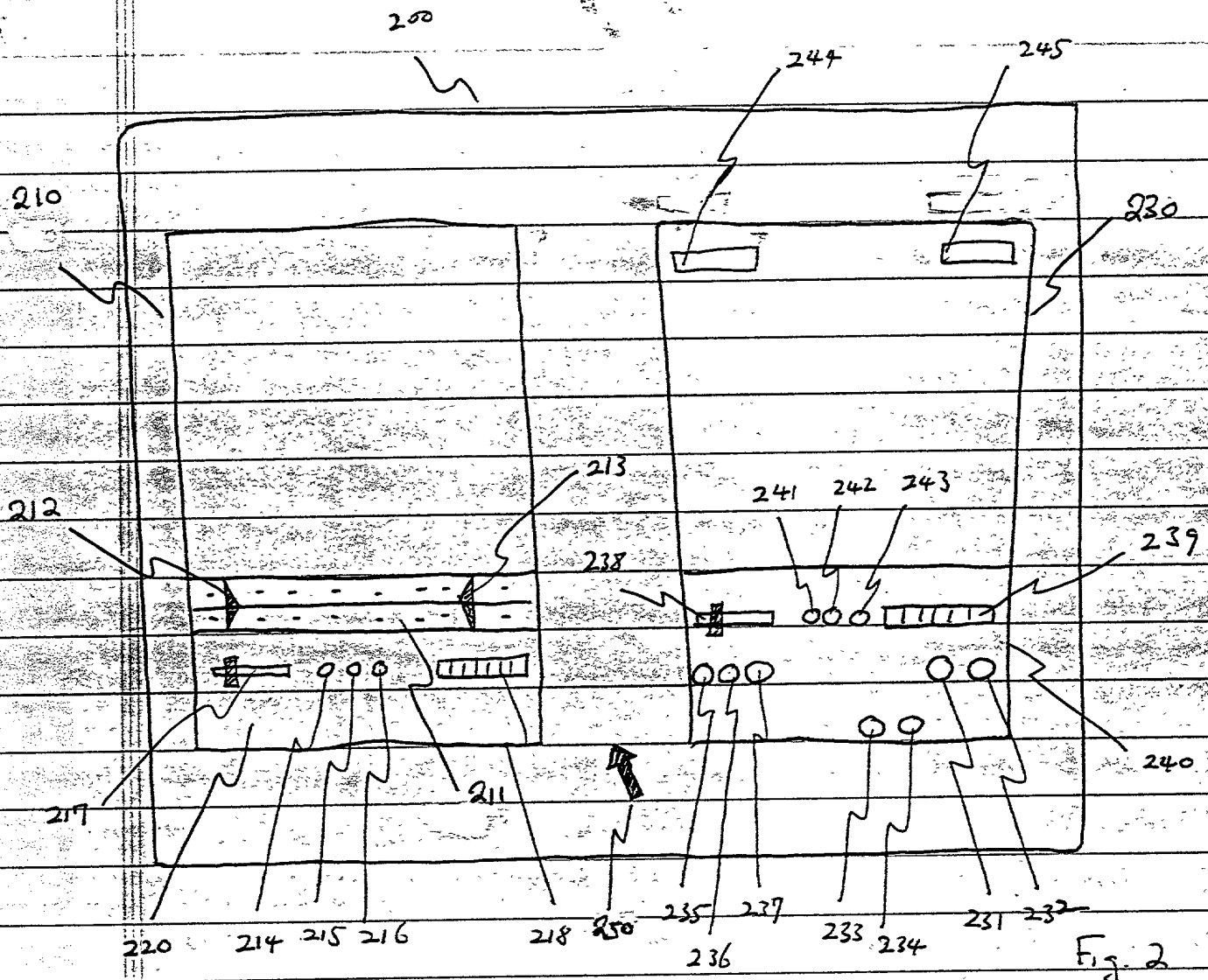004860.P2292

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Fig. 1a

Fig. 1b

Fig. 1c

Fig. 2

301

Edit the Source Media
and the Tape Media
using three point edit

302

Insert edit to tape using
an icon representing a
function to be performed
on the tape

Fig. 3